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Received: 2 June 2024 | Revised: 6 October 2024 | Accepted: 18 November 2024

DOI: 10.1111/joca.12613

RESEARCH ARTICLE

the journal of consumer affairs WILEY

Sugar coating cartoons for girls: Gender stereotypical themes and the use of food in toy-tied media

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Abstract

Toy-tied media (TTM) are promotional vehicles for toys and other merchandise depicting featured characters. Across two studies, this research finds significant differences in plot themes and the frequency and types of foods present in TTM based on target gender. Study 1 uses content analysis to understand how foods (especially sweets) are utilized to show nurturance and domesticity in girls' TTM while a focus on violence in boys' TTM minimizes the plot relevance of food. Study 2 uses automated text analysis on 1041 h of TTM transcripts to quantify the occurrence of select food categories and themes. Study 2 finds that sweets occur eight times more frequently in girls' TTM than in boys' TTM and that sweets occur five times more frequently in TTM rated appropriate for viewers six and under compared to TTM rated for older viewers. The findings suggest the need for intervention and potential interventions are discussed.

KEYWORDS

children's media, food cues, gender targeting

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1 | INTRODUCTION

When it comes to influencing children's attitudes towards food, does it matter if a beloved character like Barbie eats a cupcake on screen during entertainment media, or does it only matter if someone eats a cupcake during a paid advertisement? Policy concern and action has reduced the advertising of obesogenic foods to children but has not reduced obesity. Research conducted by the Federal Trade Commission indicates that from 1977 to 2004, children's overall exposure to food advertisements fell by 9% while childhood obesity increased (Desrochers & Holt, 2007; Holt et al., 2007). Since then, childhood obesity has continued to grow largely unabated (Anderson et al., 2019). We argue that, regarding food, there is a need to think differently about media portrayal to children. While violence in children's programming has been a focus of policy, there has not been a similar concern about the presentation of obesogenic food to children.

Children in a marketplace context are discussed as vulnerable due to their inability to make mature or reasoned judgments (Chaplin & John, 2010). Furthermore, research has shown that young children derive happiness from material goods whereas older children and adults tend to gain happiness from lived experiences (Chaplin et al., 2020). In the current context, a young child's preference for material products orients their attention to toys and to media having toys that can be purchased. Given continuing concerns about obesity, and the importance of child vulnerability, this research focuses on how food is presented in toy-tied media.

We use the term "toy-tied media" (TTM) to refer to all types of entertainment media featuring characters that are also represented in toy lines. We utilize gender stereotypical themes in our analysis given their influence on plots and props in storytelling. The violence theme (an established area for concern) is utilized as an important contrast to the themes of nurturance and domesticity in examining how themes are related to the prevalence of specific types of food.

Study 1 uses traditional content analysis to understand how foods are utilized in story building and finds differences regarding the plot relevance of food between boys' and girls' TTM. We are particularly interested in understanding if and how any obesogenic foods (e.g., sweets and fast food) are used in storytelling. Study 2, an automated text analysis of 1041 h of TTM transcripts, quantifies how many times per hour a child would likely be exposed to words related to selected food categories and themes based on the target gender of TTM. A major finding is that words related to sweets occur eight times more frequently in girls' TTM than in boys' TTM. Study 2 also demonstrates that sweets are about five times more prevalent in TTM rated appropriate for children aged 6 years and under than in TTM rated for audiences 7 years and older. These findings point to a research and policy gap where food references embedded in children's media have been ignored, particularly in how food references might differ by target gender. Finally, we examine our findings against the ethical question of whether gender targeted TTM create child vulnerability and discuss the need and appropriateness of potential interventions.

2 | BACKGROUND AND THEORETICAL FRAMEWORK

2.1 | Background on TTM

Since the success of Kennar's original 1977–1986 Star Wars toy line, toy manufacturers have recognized the importance of TTM in creating demand for plastic representations of the characters seen on the screen (see Bainbridge, 2010). These programs have been described as "toyetic"

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in that they spawn items that can be used in play (Bainbridge, 2010). Today, publicly traded toy manufacturers such as Hasbro, Mattel, Lego, and Playmates Toys publicly acknowledge the role that TTM play in creating demand for their products in their annual reports. Some toy manufacturers, like Hasbro and Mattel, run their own media production companies to create content based on their toy brands. When the third generation of My Little Pony was seen as struggling in 2009, Hasbro relaunched the brand with a new series, My Little Pony: Friendship Is Magic in 2010. This boosted the brand and helped grow annual sales of My Little Pony toys and branded merchandise to over $1 billion in 2015 (Hasbro, 2016).

However, before the 1980's the ability to create children's programming based on toys was severely limited by public policy. When Mattel co-created a cartoon based on their Hot Wheels brand of toy cars in 1969, the Federal Communications Commission (FCC) required broadcasters to log part of the program's run time as advertising after complaints from rival toy companies (Wojahn, 1988). In 1974, the FCC made it clear that stations airing programs that inappropriately "showcased" an advertiser's product would have difficulty renewing their broadcasting license (Federal Communications Commission, 1974). This changed when FCC Chairman Mark Fowler allowed broadcasters to air Mattel's He-Man in 1983 without threat of losing their broadcasting license. Fowler argued that allowing toy manufacturers to create and air media content would result in more variety and thus higher quality entertainment for young consumers (Kunkel & Watkins, 1987). With a permissive FCC, toy manufacturers such as Hasbro and Mattel responded by creating copious amounts of toy-based television programming. By 1986, 30 toy-based shows were offered for syndication at a television trade convention (Boyer, 1986).

Parents were concerned that these new shows based on toys were simply 30-min commercials (Muehling et al., 1992). Consumer backlash led to calls to ban toy-based programming. In response, Congress passed the Children's Television Act of 1990. The Children's Television Act re-established limits on the amount of time that advertisements can be aired during children's television programming to a maximum of 10.5 min per hour on weekends and 12 min per hour on weekdays. However, toy-based television programs were still permissible if replicas of the characters were not advertised during the commercial breaks of that program (Muehling et al., 1992).

Despite the Children's Television Act, TTM have grown in prevalence and importance as the entertainment industry has increasingly embraced transmedia storytelling (von Stackelberg, 2018). Transmedia storytelling immerses consumers in fictional worlds and allows for a greater depth of understanding about favorite characters across several different media forms (Jenkins, 2003). In the context of transmedia storytelling, merchandise tie-ins such as toys, costumes, and food can be thought of as resources to expand the fictional world through play (Jenkins, 2010). Transmedia storytelling thus results in a complex network of production, marketing, and licensing relationships (Harvey, 2013) that now extends beyond media to a host of non-media products.

Toy manufacturer's have recognized the importance of transmedia storytelling in creating demand for their core products (DeMott, 2015). In their 2020 annual report, Hasbro, uses the term "storytelling" 24 times to explain a key part of their strategy to connect with children, and they use the term "franchise" 34 times to refer to their most valuable brands like Transformers and My Little Pony (Hasbro, 2021). Hasbro's 2020 annual report also highlights their purchase of Entertainment One, which gave Hasbro enhanced media production capabilities and ownership of the Peppa Pig and PJ Masks franchises (Hasbro, 2021).

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Although not as obvious as some forms of promotion blurring the lines between advertising and entertainment, TTM hold the potential to be even more concerning from an advertising ethics perspective (Moore, 2004) given that TTM fly under the radar of regulation and even parental awareness. While several countries have banned the advertising of junk food during children's television programming (World Health Organization, 2022), there are no such restrictions on the food content presented in children's media (Federman, 2013; Kublenz-Gabriel, 2016). The relationship between TTM and junk food advertising is further complicated by licensing agreements that use children's media characters to promote food products directly to children on packaging and in advertising (World Health Organization, 2022) or as collectable toys with fast food meals (McAlister & Cornwell, 2012).

2.2 | Children as vulnerable consumers

Children are vulnerable because they are developing capabilities that are important in day-to-day life, which includes consumer behaviors. For example, executive functions are "capacities that enable a person to engage successfully in independent, purposeful, self-serving behaviors" (Lezak, 1995, p. 42). Executive function begins to appear early in childhood but continues to develop into adolescence. Research has found that executive functioning, cognitive ability and the developmental capability termed "theory of mind" are significant predictors of preschool aged children's ability to form mental representations of brands (McAlister & Cornwell, 2010). The latter capability is particularly important in social contexts.

Central to early child vulnerability is their evolving development of theory of mind. Theory of mind is a construct (not a theory per se) that refers to a type of social development where one gains the ability to attribute mental states to the self and to others (Wellman, 1990). For example, as theory of mind develops, a child can judge that people can have different views of the same object or understand that two people may have different knowledge that leads to different understanding of a situation (Wellman & Liu, 2004). Regarding marketing, theory of mind is important in understanding that cartoon characters are part of shows, but the development of theory of mind is also essential to understanding the intent by marketers (their mind) that toys are sold to children that enjoy the show.

While theory of mind develops rapidly early in childhood, adolescents continue to develop their ability to infer the mental and affective states of others into adulthood (Meinhardt-Injac et al., 2020). Thus, children, and even adolescents, may be vulnerable to these types of communication since they may not understand their relationship to marketing. To be clear, these are not marketing communications as already discussed in creating child vulnerability (Kennedy et al., 2019) but are transmedia stories using social contexts. Theory of mind is required for understanding social contexts (Selcuk et al., 2023) and social persuasion even when it is not part of overt marketing.

Persuasion knowledge refers to an individual's consumer knowledge, their beliefs regarding marketers' motives, strategies, and tactics; or more generally how persuasion works (Friestad & Wright, 1994). Persuasion knowledge increases over a person's lifespan (Wright et al., 2005) but even children ages 3–5 show the beginnings of persuasion comprehension when tested with age-appropriate materials (McAlister & Cornwell, 2009). While it is important to understand TTM in the context of transmedia storytelling as potentially communicating a persuasive message to purchase toys, it is the artifacts of this process that are the concern of the current work.

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Our focus is on how repeated exposure to obesogenic foods used as props in TTM storytelling could result in harm.

2.3 | Food cues embedded in children's media and their effects

A meta-analysis of the effects of food cues embedded in children's media, synthesizes empirical work on the topic published up to 2018 (Villegas-Navas et al., 2020). The meta-analysis found that across 20 studies in 13 articles, foods embedded in children's media had a significant impact on food choice. Furthermore, they found that across 13 studies in 7 articles, foods embedded in children's media had a significant impact on consumption. Importantly, foods that are more fully integrated into the plot of children's media have stronger effects than more superficial representations (Naderer et al., 2018). Efforts to understand what type of food messages children are exposed to through entertainment media are particularly important as the effects of embedded food on choice appear to be strongest among children under age nine (Uribe & Fuentes-García, 2015), particularly when it comes to increasing unhealthy food choice (Villegas-Navas et al., 2019).

Content analyses reveal several factors that add weight to the importance of understanding communicated values in media. For example, in a content analysis of children's programming, unhealthy foods were more highly valued by characters (Matthes & Naderer, 2019). Ultra-processed foods tend to be associated with positive scenes while minimally processed foods tended to be associated with negative scenes (Horta et al., 2021). In other work, almost half of positive food cues referred to sweets and snacks (Tzoutzou et al., 2019). Studies suggest that sweets are the most common food category in children's programming (Matthes & Naderer, 2019; Scully et al., 2016), and cartoons feature the most food cues of any genre of programming to which children are exposed (Scully et al., 2016). However, Araque-Padilla et al. (2019) found that food messages in animated serials targeting younger audiences tend to be more plentiful and more positive towards a healthy diet compared to the food messages in animated serials targeting children 7 years and older.

Our research expands on previous work by focusing on how food depictions vary according to gender-based targeting. The previously reviewed content analyses tended to choose media samples based on popularity (e.g., Araque-Padilla et al., 2019; Matthes & Naderer, 2019; Tzoutzou et al., 2019), which tends to favor gender neutral media since it can appeal to a wider audience. By focusing on gender targeted TTM, we examine whether the food cues children are likely to be exposed to will vary greatly according to their gender.

2.4 | Gender stereotypical themes in toy marketing

Boys' toys are traditionally associated with violence, competitiveness, excitement, and danger, while girls' toys are traditionally associated with nurturance (Nurturance, n.d), domesticity, and physical attractiveness (Blakemore & Centers, 2005). Even though the practice of gendered toy marketing has come under criticism (Fine & Rush, 2018), there is evidence of continued thematic differences in how toys are marketed based on target gender. A content analysis of Lego playsets found that sets targeting boys featured more themes of "Expert," "Heroism/Danger," "Urgency," "Employment," and "Profession," while sets targeted towards girls featured themes

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of "Domesticity (Domesticity, n.d)," "Recreation," "Hobbies," "Socializing/Friendship," "Caring/Sharing," "Novice," and "Beauty/Attractiveness" (Reich et al., 2018).

In this research, we are primarily concerned with themes that might influence the plot relevance of food in TTM. The feminine themes of nurturance and domesticity have strong associations with food preparation and are therefore of primary interest. The Merriam-Webster Dictionary defines nurturance as "affectionate care and attention," while domesticity is "the quality or state of being domestic (Domestic, n.d)" which reflects one's "devotion to home duties and pleasures" and "relating to the household or the family." The provision of food is frequently shown in advertisements as an important and concrete way for females to show love and nurturance (Parkin, 2006). The baking of sweet goods holds special importance in the "performance of femininity," with the creation and presentation of a child's birthday cake representing the pinnacle of performing motherly love (Cedro, 2019). Certain girls' toys like baby dolls and Easy Bake Ovens explicitly reinforce this performance of feminine nurturing and domesticity through the creation and provision of food. Other girls' toys, such as Barbie and Disney Princess "fashion dolls," often include sweet treats, like ice cream or cupcakes, as accessories that are meant to be consumed with friends in a social setting.

Violence in children's programming (for a review see Martins & Riddle, 2022) and advertising violent toys (e.g., Basch et al., 2015) has received significant researcher attention for decades. Media targeting boys are frequently criticized for being overly violent and are blamed when males act out in violent ways (Parents Television Council, 2018). Given the emphasis on machines (cars, trucks, trains, etc.) and weapons (toy guns, swords, action figures, etc.) found in boys' toys, it seems only natural that TTM associated with those toys would rely on action and violence as a plot device. With so much screen time devoted to action and fighting, do these characters ever take time to eat or prepare food? If so, how relevant to the overall plot would this food be? What types of food would be most prevalent?

2.5 | Hypothesis development

Based on a synthesis of the previous literature, we now propose a series of hypotheses that we investigate in our empirical studies. Figure 1 illustrates a conceptual model of how hypotheses 1a–3 are related.

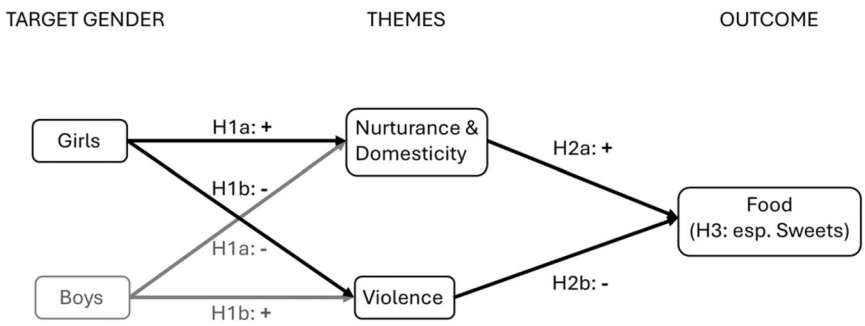

FIGURE 1 Conceptual model illustrating how the target gender for toys influences the prevalence of gender stereotypical themes in related toy-tied media (TTM), which in turn influences the prevalence of food (especially sweets) in those same TTM.

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Due to established gender targeting strategies in toy marketing, TTM present a unique opportunity to study differences in children's media based on gender targeting. We anticipate that established gender stereotypical themes present in gender targeted toy marketing will become important plot themes in associated TTM. Specifically, we propose:

H1a. *Girls' TTM will feature more nurturance and domesticity.*

H1b. *Boys' TTM will feature more violence.*

Further, we anticipate that these plot themes will have a strong influence on the plot relevance of food in TTM. We anticipate that themes of nurturance and domesticity will lead to TTM stories that focus on the creation and provision of food, while action and violent conflict will leave little time to focus on food. Formally, we propose:

H2a. *Nurturance and domesticity will increase the plot relevance and occurrence of food.*

H2b. *Violence will reduce the plot relevance and occurrence of food.*

Previous research has found that sweets are the most frequently represented category of food in children's media (Matthes & Naderer, 2019; Scully et al., 2016). Additionally, "performative femininity" appears to be especially tied to baking sweets such as birthday cake (Cedro, 2019) which is also represented in toys targeting girls (i.e., Easy Bake Oven and playsets that feature sweet treats to share with friends). Therefore, we anticipate that sweets will be particularly plot relevant in girls' TTM and will appear at a greater frequency than in boys' TTM.

H3. *Girls' TTM will feature sweets at a greater frequency than boys' TTM.*

Finally, we propose a counterintuitive hypothesis based on unintended consequences of current media rating systems. While previous research indicates that shows targeting younger audiences tend to have healthier food messages than shows targeting older audiences (Araque-Padilla et al., 2019); we contend that shows rated appropriate for younger audiences may feature more sweets than shows rated appropriate for older audiences. This is due to rating systems such as the TV Parental Guidelines for television programming and the Motion Picture Association of America (MPAA) rating system for movies, being based on the levels of violence, crude language, sexuality, and drug use shown in entertainment media (Gentile, 2008). Violence is the most likely of these factors to occur at a high rate in TV shows rated TV-Y7 (Gabrielli et al., 2016). These rating systems reduce the available themes and plots that might engage young children. Thus, we anticipate that shows featuring violence and rated TV-Y7,PG, or older will not feature significant amounts of sweets. In contrast, shows rated TV-Y or G would not be able to use violence related themes and may thus include more themes and plots that are related to sweets. Therefore, we propose:

H4. *The focus on violence of current media ratings systems will lead to a greater occurrence of sweets in TTM rated appropriate for children six and younger than in TTM rated for audiences seven and older.*

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3 | STUDY 1: CONTENT ANALYSIS OF FOOD AND THEMES IN GENDER TARGETED TTM

This study uses traditional content analysis to investigate H1a–3 in terms of how themes influence the storytelling and food shown in gender targeted TTM. We describe the prevalence of plot relevant themes and how they relate to food in gender targeted TTM with a special focus on the obesogenic food categories of sweets and fast food. This study is restricted to animated serials from franchises with explicit toy manufacturer gender targeting.

3.1 | Method

3.1.1 | TTM selection

We sought recent animated serials from eight franchises that were available to stream on Netflix in the United States and that toy manufacturers classified as either targeted towards girls or boys (Hasbro, 2017; Lego, 2022; Mattel, 2022; Robertson & Breen, 2013). The four selected serials for boys were: Lego Ninjago: Masters of Spinjitzu, Marvel's Avengers Assemble, Star Wars: Clone Wars, and Transformers: Rescue Bots. The four selected serials for girls were: Barbie: Life in the Dreamhouse, Lego Friends, Littlest Pet Shop, and My Little Pony: Friendship Is Magic. We randomly selected three episodes from the first season of each show using a random number generator following the work of Manganello et al. (2008), which suggests reviewing 3–5 episodes per season for content analysis.

3.1.2 | Data collection and analysis

Each episode was recorded and watched by one of the study authors to create a coding sheet for focal foods and themes. All episodes were then watched independently by two coders (trained to conduct content analysis) and coded at the episode level for each of the foods and themes. Foods were coded only if the food was shown or discussed on screen. Instances of food shaped objects (e.g., a bed shaped like a hamburger) and metaphorical use of food words (e.g., "Easy as pie.") were not included. The coders initially agreed on 95.0% of all ratings. The Cohen's Kappa coefficient was $\kappa = 0.87$. Disagreements were resolved through discussion and rewatching the segments in question.

3.2 | Findings

Themes related to food-maker identity (e.g., baker) and food as a social good to show caring were more frequently represented in the observed girls' TTM compared to the boys' TTM. Sweets were often the focal food being prepared or presented to show nurturance in girls' TTM. In contrast, themes of violent conflict were more prevalent in boys' TTM. Importantly, foods were consistently relevant to the plots of girls' TTM (e.g., main character baking cupcakes) but not in boys' TTM. Fast food was featured less frequently in both boys' and girls' TTM compared to sweets. The number of episodes in which a particular theme or food occurred is detailed by target gender in Table 1. Following are detailed examples of these findings by

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TABLE 1 Study 1 number of episodes a food or theme occurred in by target gender.

	Target gender		*t*-Test	
	Boys	**Girls**	***t*-Value**	***p*-Value**
Sweets				
Candy	1	9	−4.30	<0.001
Cake or cupcakes	2	11	−5.36	<0.001
Cookies	1	5	−1.96	0.07
Other pastries	–	7	−3.92	<0.01
Frozen desserts	1	5	−1.96	0.07
Sweetened beverages	–	10	−7.42	<0.001
Fast food				
Pizza	2	1	0.60	0.56
Hamburger	–	2	−1.48	0.17
Hot dog	–	2	−1.48	0.17
Tacos	–	1	−1.00	0.34
Themes of food-maker identity				
Baking	–	6	−3.32	<0.01
Food occupation	–	8	−4.69	<0.001
Food based name	–	5	−2.80	<0.05
Themes of food as a social good				
Celebration involving food	–	5	−2.80	<0.05
Gifts related to food	2	2	–	–
Sharing food during quality time	2	7	−2.24	<0.05
Themes of violent conflict				
Intent to harm	11	1	7.07	<0.001
Rough housing	4	4	–	–
Weaponry	11	1	7.07	<0.001

Note: Number of episodes reported is out of 12 episodes for boys (three episodes from four series) and 12 for girls. The reported number represents the number of episodes coded after the coders discussed and resolved disagreements. A *t*-test was conducted on each item to test for statistically significant differences.

thematic grouping. When specific episodes are mentioned, the season and episode are listed (ex. Barbie 1.3 indicates Barbie season 1 episode 3).

3.2.1 | Themes of food-maker identity

Food-maker identity was depicted in themes of baking, engaging in food related occupations, and having food-based character names. Overall, themes related to food-maker identity played a greater role in girls' TTM than boys' TTM and were often shown in conjunction with sweets but not fast food.

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Baking

The theme of baking included visual depictions of baking or baking supplies and verbal discussions about baking. Baking was very common and plot relevant in girls' TTM, but almost entirely absent in boys' TTM. Baking was shown in the context of making baked goods with friends (Lego Friends 1.1 and Barbie 1.3), for friends (Barbie 1.6), and as a profession (Littlest Pet Shop 1.15 and 1.16). The frequency of appearances of baked goods and level of plot integration in the observed girls' TTM compared to the boys' TTM suggest that baking and baked goods are associated with female identity in these TTM.

Food occupation

Main and supporting characters were frequently depicted in a food production or food service role in girls' TTM but not boys' TTM. In My Little Pony, Applejack lives and works on her family's apple farm and Pinky Pie lives and works at a bakery and sweet shop called Sugar Cube Corner. In Littlest Pet Shop, the main character Blythe is responsible for feeding and cleaning up after the pets in the shop. In episode 1.15, Youngmee's Aunt Christy opens a sweet shop next door to the Littlest Pet Shop, and the pets sneak in and eat everything in the sweet shop. In episode 1.16 the pets go for a joy ride in the sweet shop's delivery van.

Food based name

Characters and pets in girls' TTM also frequently had food-based names, such as Pinkie Pie, Applejack, Applebloom, Granny Smith, and Big Macintosh in My Little Pony, or Buttercream Sundae, Sugar Sprinkles, and Pepper in Littlest Pet Shop. In contrast, there were no proper food names in the observed boys' TTM, however, it is notable that a villain in Lego Ninjago 1.7 was known as "The Great Devourer" and a villain in Marvel's Avengers 1.22 was referred to as "Galactus, the Devourer of Planets."

3.2.2 | Themes of food as a social good

Food as a social good, used for showing others that you care about them, included themes such as celebrations involving food, gifts related to food, and spending quality time while sharing food. As with food-maker identity, themes related to food as a social good played a greater role in girls' TTM than boys' TTM and were most often shown in conjunction with sweets rather than fast food.

Celebrations

Celebrations involving food were common in the girls' TTM and the plot often revolved around these celebrations. Celebrations included a wedding (Lego Friends 1.6), a birthday party (Littlest Pet Shop 1.7), a welcome party (My Little Pony 1.5), and civic events (Lego Friends 1.1 and 1.5). The girls' celebrations featured food prominently, especially cake, cupcakes, and ice cream.

Quality time

Quality time, where characters ate or drank as part of spending time together outside of an official planned celebration, was another theme that was more prevalent in girls' TTM. In the girls' TTM, quality time included socializing in a café (Barbie 1.1 and 1.6, Lego Friends 1.5, Littlest Pet Shop 1.15), eating around a campfire (Lego Friends 1.6), and game night (Barbie 1.6).

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Sweetened beverages including smoothies, milkshakes, and mochas were common during quality time in the girls' TTM. The clearest example of food during quality time shown in the boys' TTM was at the beginning of Lego Ninjago 1.1 when the ninjas were playing video games and eating pizza.

Gifts

Giving a food related item as a gift occurred in girls' TTM when Ken gave Barbie chocolates in Barbie 1.2, and Barbie discusses several of the food preparation gizmos that she received as gifts in Barbie 1.6. In boys' TTM, Red Falcon brought cookies (that his mother baked) for the other Avengers in Avengers 1.3, and there was an instance when soldiers gave a starving refugee girl a food ration in Star Wars 1.20.

3.2.3 | Themes of violent conflict

Violent conflict was included as a theme because of its association with toys marketed to boys and its potential negative influence on the plot relevance of food in boys' TTM. The previously discussed themes illustrate how food lacked plot relevance in boys' TTM compared to girls' TTM. Instead, violent conflict is more plot relevant in boys' TTM, and significant screen time was devoted to fighting. To examine this, instances of physical violence with intent to harm, general rough housing, and the use of weapons were also coded.

Intent to harm

Physical violence with intent to harm included instances of physical violence where the character intends to inflict serious physical harm to an opponent. Physical violence with intent to harm was almost ubiquitous in boys' TTM, but almost never occurred in girls' TTM. This sort of violence in boys' TTM was frequently clustered together as part of long, life-or-death, fight scenes.

Rough housing

In contrast, general rough housing included instances of characters wrestling in a friendly manner. This may have included disagreements or trying to subdue an opponent, but was generally good-natured and unlikely to lead to severe physical harm. Rough housing occurred about as frequently in the observed girls' TTM as in the boys' TTM.

Weaponry

Finally, weapons were frequently visible and identity relevant in boys' TTM but almost absent in girls' TTM. In Lego Ninjago, the main characters are differentiated by which weapon they use and the color they wear. In Marvel's Avengers, Thor has a war hammer named, Mjolnir, Iron Man's suit can shoot energy blasts, Hawkeye has a bow, and Captain America has his iconic shield. Lightsabers and blasters were ubiquitous in Star Wars. In contrast, there was only one coded incidence of weapons in girls' TTM, which occurred in Littlest Pet Shop 1.15 when the pets created spears out of candy.

3.3 | Discussion

Regarding H3, Study 1 provides evidence that sweets are frequently featured in TTM targeting girls, but that sweets, and food in general, occur less frequently in boys' TTM. Study 1 also

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illustrates how themes related to food-maker identity and food as a social good in girls' TTM are associated with the creation and consumption of sweets, which supports H1a and H2a. In contrast, the focus on violent conflict in boys' TTM minimizes the plot relevance of food to merely refueling between battles, which supports H1b and H2b. Study 1 provides an in depth look at the interplay between gender stereotypical themes and the depiction of food in TTM but is limited to 24 episodes from eight serials. We address this limitation in Study 2 by greatly expanding the size and diversity of our sample.

4 | STUDY 2: AUTOMATED TEXT ANALYSIS OF TTM TRANSCRIPTS

Study 2 seeks to strengthen and generalize findings from Study 1 by employing automated text analysis to quantify the occurrence of foods (sweets, fast food, and vegetables) and themes (domesticity and violence) on a diverse corpus of TTM transcripts. We then test H1a–3 by comparing the rate of occurrence by target gender. Study 2 also seeks to test H4 by comparing the occurrence of sweets and violence in TTM based on US Federal Communications Commission parental guidance ratings for television and the Motion Picture Association of America (MPAA) ratings for movies. In contrast to the traditional content analysis of Study 1, which relies on human coders viewing and coding various video segments, Linguistic Inquiry Word Count (LIWC) automated text analysis allows consideration of large bodies of data quickly and with greater objectivity (Balducci & Marinova, 2018; Berger et al., 2020; Humphreys & Wang, 2018). Results of the automated text analysis were analyzed using Poisson regression to examine the relationship between prevalence of food types and gender stereotypical themes by target gender (Model 1) and by age appropriateness rating (Model 2).

4.1 | Method

4.1.1 | Text corpus construction

To identify media for inclusion in the text analysis, we generated a list of 85 TTM franchises through an iterative process of comparing toy offerings from toy manufacturer websites, physical retail stores, and retailer websites with entertainment media available from streaming services in the United States. Franchises were only included in the list if there was evidence that children's toys were available and if the related media were available to stream in the United States. Media types include television and streaming serials, major motion pictures, direct to video movies, and webisodes.

We then pretested these franchises for perceived gender targeting and familiarity using a sample of 256 parents from the Unites States that were recruited using the Prolific platform and compensated for their time. Eight parents were dropped for failing an attention check, leaving a usable sample of 248 parents (50% female, M_{age} 44.9). Each parent responded to 10 randomly presented franchises so that every franchise was rated by 30 different parents. Parents were presented a picture of representative toys featuring characters from each franchise and then asked about their familiarity with each franchise and perceptions of target gender. We asked parents about the target gender for toys rather than asking directly about the target gender for

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the TTM because previous research indicates that parents are better able to express gender stereotypical beliefs about physical toys than entertainment media (Eisen et al., 2021).

We asked about familiarity with the question "How familiar are you with [franchise]?" Responses were coded on a five-point scale (1 = "Not familiar at all," to 5 = "Extremely familiar"). We asked for their perception of target gender with the question "Are [franchise] toys for girls, boys, or gender neutral?" Responses were coded on a single seven-point scale (1 = "Strictly for Girls," 4 = "Gender Neutral," and 7 = "Strictly for Boys").

To ensure data quality, we only included responses from participants indicating they were at least moderately familiar with the franchise ("Moderately familiar" was the mid-point of our 5-point scale). We also dropped seven franchises from further analysis because fewer than four parents reported being at least moderately familiar. This brought the total number of observations to 1217 and the number of franchises to 78. Twenty-six franchises had an average rating of 3 or lower and were coded as targeting girls. Twenty-two franchises had an average rating of 5 or higher and were coded as targeting boys. Thirty franchises had an average rating of less than 5 and higher than 3 and were coded as gender neutral.

We then sought transcripts of audio-visual media from the 78 pretested toy and media franchises. Our resulting text corpus is comprised of 2333 transcripts representing 1041 h of video content and over 5 million words. Transcripts were obtained from a variety of sources, including streaming platforms and fan websites. For television/streaming serials, all episodes of the earliest available season were included in the sample. Transcripts were cleaned to remove closed caption audio descriptions and character cues leaving only words spoken by characters for analysis. Appendix A provides details on the amount of content included from each franchise as well as the gender targeting score and category from the pretest.

4.1.2 | Dependent variables

Foods

Because published and validated dictionaries for discreet food categories were not available, we created dictionaries for our focal obesogenic food categories, sweets and fast food. We also added vegetables to broaden our food representation. The dictionaries were developed in two phases. The first phase focused on identifying words from the text corpus related to each food category. A word frequency analysis of all unique terms from a sample of the text corpus was conducted and a total of 45,317 unique terms were identified. Foods representing each food category were identified and retained. In the second phase, additional foods, and variants in word usage were identified using ConceptNet 5.5 (Speer et al., 2017) and added. Spelling variations and any missing plural or singular forms of words already in the dictionary were added. The resulting food dictionaries include the following: fast food (49 terms), sweets (85 terms), and vegetables (55 terms). See Appendix B for the food dictionaries developed for Study 2.

Themes

We use the "home" and "ingest" dictionaries included with LIWC 2015 (Pennebaker et al., 2015) to measure themes dealing with domestic issues, food preparation and consumption, which are consistent with gender stereotypical themes associated with traditionally feminine toys. Terms such as "kitchen," "oven," "pets," and "vacuum" are part of the home dictionary while "eat," "chew," "dinner," and "baking" are part of the ingest dictionary. We used the "violence" and "weaponry" dictionaries that in part comprise the Grievance Dictionary

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(van der Vegt et al., 2021) to measure themes related to conflict, which are consistent with gender stereotypical themes associated with traditionally masculine toys. Terms such as "attack," "fight," "shoot," and "violent" are part of the violence dictionary while "armor," "gun," "sword," and "weapon" are part of weaponry dictionary.

Hourly rate conversion

Since our text data represents transcripts of media with known runtimes, we converted the normal LIWC output to word count per transcript and then hourly rate to ensure that the amount of time for each observation would be constant. This was done by taking the LIWC output and multiplying by the total word count for the transcript and then dividing by 100 to get the raw term count per transcript. Next the term count per transcript was divided by the number of minutes, multiplied by 60, and rounded to the nearest integer in order to get the rate per hour. To illustrate this conversion, here is an example from a sample transcript with output for the sweets dictionary:

- LIWC output for sweets: 0.48.
- Total transcript word count: 2484.
- Raw term count for sweets: (0.48 * 2484) / 100 = 12.
- Media runtime in minutes: 25.
- Hourly rate: (12 / 25) * 60 = 29.

Thus, this sample transcript had an hourly rate of 29 instances of terms from the sweets dictionary.

4.1.3 | Independent variables

Gender

Target gender was coded as boy, girl, or gender neutral based on the results from the pretest. Content included in the text corpus across the three groups are as follows: boys (728 transcripts, 387 h), girls (815 transcripts, 327 h), and neutral (790 transcripts 326 h).

Ratings

Parental guidance ratings were coded as either "six or younger" for transcripts of TTM rated as TV-Y, G, ALL; or "seven or older" for transcripts rated TV-Y7, TV-14, PG, or PG-13. Content in the text corpus across these two groups are as follows: six or younger (930 transcripts, 388 h), and seven or older (1403 transcripts 653 h).

4.1.4 | Control variables

Age

Each transcript was coded based on the minimum age deemed appropriate by third party content rating organization Common Sense Media. Age was coded at three levels: preschool (ages 0–4), elementary (ages 5–10), and older (ages 11+).

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Format

Format was included to capture any differences in how food is represented in long format versus short format audio-visual media. Format was coded as a dichotomous variable, movie (both major motion pictures and direct to video movies), or serial (television and streaming serials, including webisodes).

Toy origin

While all media in the sample are tied to franchises that include popular children's toys, some franchises started as toys and others are licensed by toy manufacturers. To account for potential differences due to originating as a toy first or being later licensed to create toys, we included a "toy origin" variable based on the origin of the franchise. Toy origin, a dichotomous variable, was coded "toy" for short (if the franchise was started by a toy company or based on a toy), or "not toy" (all other franchises that started with comics, books, movies, cartoons, greeting cards, or video games).

Funding

Funding source was included to capture media produced using public funds even though they are now associated with commercially licensed toys (e.g., Sesame Street). Because publicly funded shows have an educational mission, the foods shown may differ from commercial shows. Shows were coded as "public" if they appeared on a public television station, such as PBS, while other shows were coded as "commercial," even if the program airs on a streaming platform without paid advertisements.

4.2 | Findings

We analyzed the data using the GLM function in R using Poisson regression. We ran a separate regression for each model (addressing target gender in Model 1, and parental guidance ratings in Model 2) and for each dependent variable: ingest, home, violence, weaponry, sweets, fast food and vegetables. Tables 2 and 3 provide the beta coefficient, standard error, *z*-value, and exponentiated beta coefficient for the intercept and predictor variables for these regressions.

Converting the dependent variables from count of terms per transcript to rate of terms per hour makes the exponentiated beta coefficient (e^{β}) easier to interpret and discuss. The exponentiated beta coefficients were used to calculate the predicted number of terms per hour that a viewer is likely to hear given the target audience and type of media.

4.2.1 | Model 1: Target gender

The first model tests how food and theme dependent variables vary by target gender and provide evidence to support H1a–3. The intercepts for each regression in Tables 2 and 3 represent boy (gender), elementary (age), serial (format), not toy (origin), and commercial (funding).

Consistent with Study 1, and in support of H3, sweets were more prevalent in girls' TTM ($\beta = 2.13$, $p < 0.001$, $e^{\beta} = 8.37$) than boys' TTM. Further, we find sweets more prevalent for gender neutral TTM ($\beta = 1.34$, $p < 0.001$, $e^{\beta} = 3.83$) relative to boys' TTM. The exponentiated beta coefficient indicates that girls' TTM feature a term related to sweets about 8.37 times more frequently than boys' TTM. Fast food was more prevalent in both girls' TTM ($\beta = 0.46$,

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TABLE 2 Study 2 Poisson regression output on hourly word rate of food words.

Model 1: Target gender												
	DV: Sweets				**DV: Fast food**				**DV: Vegetables**			
	β	**SE**	***z*-value**	e^{β}	β	**SE**	***z*-value**	e^{β}	β	**SE**	***z*-value**	e^{β}
Intercept	−0.18	0.01	−14.62***	0.90	−0.32	0.01	−29.45***	0.73	−1.42	0.02	−89.44***	0.24
Gender												
Girls	2.13	0.01	274.18***	8.37	0.46	0.01	33.80***	1.58	1.54	0.02	92.05***	4.66
Neutral	1.34	0.01	161.47***	3.83	1.51	0.01	128.42***	4.51	1.40	0.02	82.54***	4.05
Controls												
Preschool	0.81	0.01	209.90***	2.24	−0.53	0.01	−52.06***	0.59	1.08	0.01	124.89***	2.93
Older	−0.45	0.02	−19.39***	0.67	−1.72	0.03	−51.24***	0.18	−2.70	0.09	−29.92***	0.07
Movie	−1.21	0.01	−173.45***	0.30	−0.41	0.01	−35.45***	0.67	−0.37	0.01	−29.49***	0.69
Toy	0.53	0.01	136.00***	1.69	−0.68	0.01	−56.78***	0.50	−0.38	0.01	−35.90***	0.68
Public	−0.03	0.01	−4.17***	0.97	−1.41	0.02	−58.17***	0.24	1.04	0.01	108.86***	2.82
Model 2: Parental guidance ratings												
	DV: Sweets				**DV: Fast Food**				**DV: Vegetables**			
	β	**SE**	***z*-value**	e^{β}	β	**SE**	***z*-value**	e^{β}	β	**SE**	***z*-value**	e^{β}
Intercept	2.49	0.01	841.81***	12.02	0.38	0.01	46.07***	1.46	1.05	0.01	168.84***	2.86
Rating												
7 or Older	−1.58	0.01	−374.83***	0.21	0.10	0.01	10.95***	1.10	−1.50	0.01	−160.34***	0.22
Controls												
Movie	−1.40	0.01	−221.65***	0.25	−0.89	0.01	−82.78***	0.41	−0.99	0.01	−81.24***	0.37
Toy	0.31	0.01	81.94***	1.36	−0.95	0.01	−81.96***	0.39	−0.71	0.01	−67.70***	0.49
Public	−0.56	0.01	−80.17***	0.57	−1.03	0.02	−42.24***	0.36	0.95	0.01	108.52***	2.58

Note: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$. Tests of significance were performed on the *z*-value for each variable. The intercept for Model 1 represents the following dummy codes: Boys Gender, Elementary Age, Serial Format, Not Toy Origin, and Commercial Funding. The intercept for Model 2 represents the following dummy codes: Six or Younger Rating, Serial Format, Not Toy Origin, and Commercial Funding. The exponentiated beta coefficient e^{β}) represents the predicted rate per hour that a type of word would be heard in the studied media. The predicted rate for a given type of media is a function of the exponentiated beta coefficient for the intercept multiplied by the exponentiated beta coefficient for the predictor variable.

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TABLE 3 Study 2 Poisson regression output on hourly rate for LIWC theme words.

Model 1: Target gender

	DV: Ingest				DV: Home				DV: Violence				DV: Weaponry			
	β	SE	z-value	e^{β}	β	SE	z-value	e^{β}	β	SE	z-value	e^{β}	β	SE	z-value	e^{β}
Intercept	2.71	0.01	1295.92***	15.02	2.18	0.01	830.70***	8.82	3.22	0.01	1790.79***	25.07	3.50	0.01	2174.26***	33.27
Gender																
Girls	0.86	0.01	368.68***	2.37	0.78	0.01	266.58***	2.18	−0.14	0.01	−58.86***	0.87	−0.64	0.01	−260.41***	0.53
Neutral	0.71	0.01	290.94***	2.03	0.44	0.01	141.13***	1.56	0.02	0.01	6.76***	1.02	−0.23	0.01	−101.45***	0.80
Controls																
Preschool	0.42	0.01	251.46***	1.52	0.35	0.01	145.19***	1.41	−0.59	0.01	−216.34***	0.55	−0.71	0.01	−243.46***	0.49
Older	−0.12	0.01	−25.78***	0.88	0.38	0.01	78.94***	1.46	−0.04	0.01	−9.85***	0.96	0.21	0.01	63.13***	1.23
Movie	−0.62	0.01	−35.45***	0.67	−0.35	0.01	−173.45***	0.30	−0.29	0.01	−109.33***	0.75	−0.25	0.01	−94.76***	0.78
Toy	0.05	0.01	26.73***	1.05	0.53	0.01	−119.75***	1.30	−0.03	0.01	−15.26***	0.97	−0.09	0.01	−43.68***	0.91
Public	0.29	0.01	107.81***	1.34	0.43	0.01	109.64***	1.53	0.08	0.01	16.77***	1.08	0.59	0.01	−94.45***	0.56

Model 2: Parental Guidance Ratings

	DV: Ingest				DV: Home				DV: Violence				DV: Weaponry			
	β	SE	z-value	e^{β}	β	SE	z-value	e^{β}	β	SE	z-value	e^{β}	β	SE	z-value	e^{β}
Intercept	3.94	0.01	1295.92***	51.50	3.14	0.01	1638.82***	23.04	2.66	0.01	1214.74***	14.34	2.43	0.01	1028.17***	11.33
Rating																
7 or Older	−0.83	0.01	−499.64***	0.44	−0.65	0.01	−304.75***	0.52	0.52	0.01	233.54***	1.68	0.90	0.01	381.08***	2.46
Controls																
Movie	−0.80	0.01	−369.61***	0.45	−0.32	0.01	−128.73***	0.73	−0.24	0.01	−113.57***	0.79	−0.03	0.01	−18.35***	0.97
Toy	−0.11	0.01	−62.90***	0.89	0.18	0.01	82.05***	1.20	0.06	0.01	28.66***	1.06	−0.01	0.01	−0.15	1.00
Public	0.14	0.01	53.43***	1.15	0.21	0.01	57.34***	1.23	0.17	0.01	37.65***	1.19	−0.31	0.01	−48.59***	0.73

Note: ***$p < 0.001$, **$p < 0.01$, *$p < 0.05$. Tests of significance were performed on the z-value for each variable. The intercept for Model 1 represents the following dummy codes: Boys Gender, Elementary Age, Serial Format, Not Toy Origin, and Commercial Funding. The intercept for Model 2 represents the following dummy codes: Six or Younger Rating, Serial Format, Not Toy Origin, and Commercial Funding. The exponentiated beta coefficient e^{β}) represents the predicted rate per hour that a type of word would be heard in the studied media. The predicted rate for a given type of media is a function of the exponentiated beta coefficient for the intercept multiplied by the exponentiated beta coefficient for the predictor variable.

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$p < 0.001$, $e^{\beta} = 1.58$) and gender neutral TTM ($\beta = 1.51$, $p < 0.001$, $e^{\beta} = 4.51$) than in boys' TTM. It is interesting to note that fast food was most prevalent in gender neutral TTM when controlling for age, format, origin, and funding. Finally, vegetables were also more prevalent in girls' TTM ($\beta = 1.54$, $p < 0.001$, $e^{\beta} = 4.66$) and gender neutral TTM ($\beta = 1.40$, $p < 0.001$, $e^{\beta} = 4.05$) than in boys' TTM.

In support of H1a, the "home" theme was more prevalent in girls' TTM ($\beta = 0.78$, $p < 0.001$, $e^{\beta} = 2.18$) and gender neutral TTM ($\beta = 0.44$, $p < 0.001$, $e^{\beta} = 1.56$) than in boys' TTM. In support of H1b, the "violence" theme was less prevalent in girls' TTM ($\beta = -0.14$, $p < 0.001$, $e^{\beta} = 0.87$) than in boys' TTM, but similar to boys TTM in gender neutral TTM ($\beta = 0.02$, $p < 0.001$, $e^{\beta} = 1.02$). The "weaponry" theme was less prevalent in both girls' TTM ($\beta = -0.64$, $p < 0.001$, $e^{\beta} = 0.53$) and gender neutral TTM ($\beta = -0.23$, $p < 0.001$, $e^{\beta} = 0.80$) than in boys' TTM. The "ingest" theme was more prevalent in girls' TTM ($\beta = 0.86$, $p < 0.001$, $e^{\beta} = 2.37$) and gender neutral TTM ($\beta = 0.71$, $p < 0.001$, $e^{\beta} = 2.03$) than in boys' TTM, which together with the observed patterns for the "home" and "violence" themes lends support to H2a and H2b.

Figure 2, Panel A shows the prevalence of "sweets" "fast foods" and "vegetables" by target gender. Panel B of Figure 2 shows the prevalence of the "ingest," "home," "violence" and "weaponry" themes by gender. Here gender stereotypical words are evidenced in programs targeting girls and boys. Media targeting girls have a higher word per hour count for ingest and home terms while media targeting boys have more violence and weaponry. In reviewing Panel A it is important to note that sweets feature far more frequently in girls' TTM than either fast food or vegetables. Children could expect to hear 7.53 words related to sweets each hour while watching girls' TTM, compared to about one word each related to fast food and vegetables. In contrast, children could expect to hear less than one mention of sweets, fast food, or vegetables per hour while watching boys' TTM.

4.2.2 | Model 2: Parental guidance ratings

The second model tests how food and theme dependent variables vary according to the parental guidance rating of the TTM. Target gender and age were not included in this model because of potential confounds with the parental guidance ratings. The intercepts for each regression in Tables 2 and 3 represent six or younger (rating), serial (format), not toy (origin), and commercial (funding).

In support of H4, sweets were less prevalent in TTM rated seven or older ($\beta = -1.58$, $p < 0.001$, $e^{\beta} = 0.21$) than in TTM rated six or younger. The exponentiated beta coefficient suggests that TTM rated seven or older features about one fifth the sweets that TTM rated six or younger features. Vegetables were also less prevalent in TTM rated seven or older ($\beta = -1.50$, $p < 0.001$, $e^{\beta} = 0.22$) than in TTM rated six or younger. In contrast, fast food was slightly more prevalent in TTM rated seven or older ($\beta = 0.10$, $p < 0.001$, $e^{\beta} = 1.10$) than in TTM rated six or younger.

The "home" theme was less prevalent in TTM rated seven or older ($\beta = -0.65$, $p < 0.001$, $e^{\beta} = 0.52$) than in TTM rated six or younger. Likewise, the "ingest" theme was less prevalent in TTM rated seven or older ($\beta = -0.83$, $p < 0.001$, $e^{\beta} = 0.44$) than in TTM rated six or younger. In contrast, the "violence" theme was more prevalent in TTM rated seven or older ($\beta = 0.52$, $p < 0.001$, $e^{\beta} = 1.68$) than in TTM rated six or younger, and the "weaponry" theme was also more prevalent in TTM rated seven or older ($\beta = 0.90$, $p < 0.001$, $e^{\beta} = 2.46$) than in TTM rated

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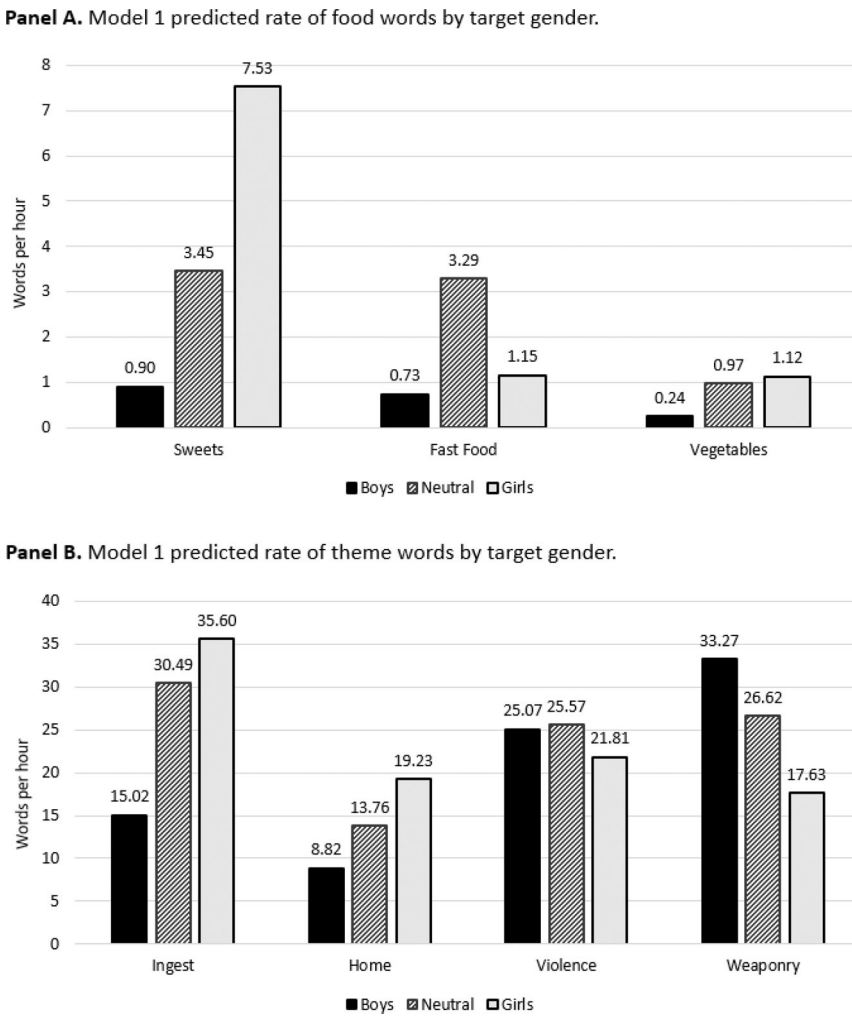

FIGURE 2 Study 2 Model 1 predicted rate per hour for food words Panel (A) and theme words Panel (B) by target gender. The predicted rates were calculated using the regression output detailed in Tables 2 and 3. Specifically the exponentiated beta coefficient for the intercept was multiplied by the exponentiated beta coefficient for the predictor variable.

six or younger. This is consistent with rating systems focusing on protecting young reviewers from depictions of violence while ignoring food messages.

Figure 3, Panel A shows the prevalence of "sweets" "fast foods" and "vegetables" by parental guidance rating. Panel B of Figure 3 shows the prevalence of the "ingest," "home," "violence" and "weaponry" themes by parental guidance rating. Themes of ingest and home are found in media designated for those six and under while violence and weaponry are more typical themes for those seven and older. This coincides with a greater presence of sweets in TTM rated six or younger compared to TTM rated seven or older. Echoing Model 1, it is important to note that sweets are featured far more frequently in TTM rated six or younger than either fast food or vegetables. One could expect to hear about 12.02 words related to sweets each hour while watching TTM rated six or younger, compared to about 1.46 words related to fast food and 2.86 words related to vegetables per hour.

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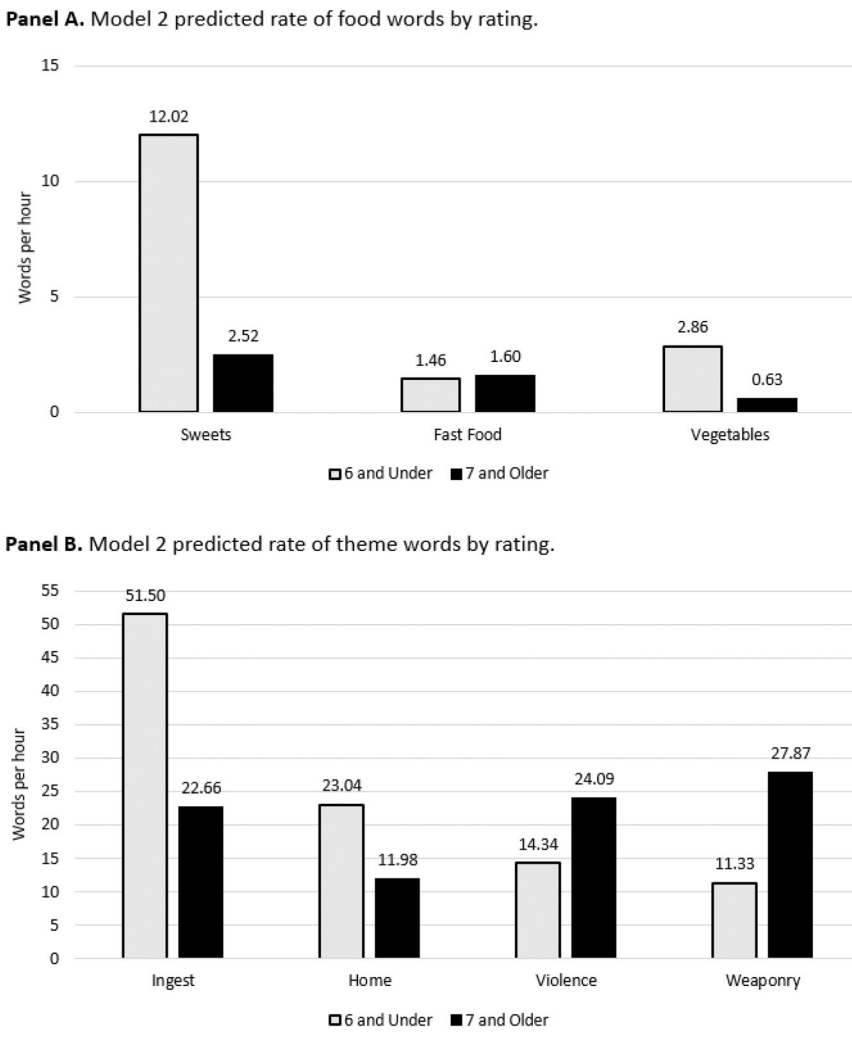

FIGURE 3 Study 2 Model 2 predicted rate per hour for food words Panel (A) and theme words Panel (B) by parental guidance age rating. The predicted rates were calculated using the regression output detailed in Tables 2 and 3. Specifically the exponentiated beta coefficient for the intercept was multiplied by the exponentiated beta coefficient for the predictor variable.

4.3 | Discussion

The results of Study 2 were consistent with Study 1. Notably, Study 2 Model 1 quantifies how sweets feature strongly in girls' TTM with words related to sweets occurring about eight times more frequently in girls' TTM compared to boys' TTM. This finding highlights a correspondence between gender targeted themes and exposure to high calorie, low nutrient sweets in girls' TTM. This previously unrecognized exposure pattern is a concern for policy.

Model 2 of Study 2 provides support for H4. The results illustrate how the MPAA and TV Parental Guidelines rate and control TTM based on violent content (Gentile, 2008). However, the results also show that sweets occur about five times more frequently in TTM rated appropriate for children aged six and under than in TTM rated appropriate for audiences seven and

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older. This is problematic given that the effects of food cues in media on food choice appear to be strongest among children under the age of 9 (Uribe & Fuentes-García, 2015) particularly when it comes to increasing unhealthy food choice (Villegas-Navas et al., 2019).

5 | GENERAL DISCUSSION

5.1 | Policy, stakeholder, and consumer implications

Based on our traditional content analysis in Study 1 and our automated text analysis in Study 2, we find strong evidence that gender stereotypical themes found in gender targeted toy marketing drive plot themes in associated TTM. We observed a strong presence of nurturance and domesticity in girls' TTM and violent plot themes in boys' TTM. Importantly, these plot themes appeared to drive higher representation of food preparation and a higher frequency of sweets in girls' TTM, while boys' TTM featured more violent conflict and weaponry. The latter has been addressed to some degree across nations through media rating systems limiting violence, sex and crude language; the former has been unidentified and unaddressed. These insights suggest the need for intervention.

In early work on ethics in marketing, Brenkert (1998) finds vulnerability to be a "four place relation": Some person (P) is vulnerable to another (moral or causal) agent (A) with respect to some harm (H) in a particular context (C). Applied to the current work we consider children and their vulnerability to TTM as a socialization agent (potentially causing harm) in the context of transmedia storytelling. We have established in our discussion of theory of mind that children are potentially vulnerable due to their evolving social development, and particularly vulnerable due to the circumstances they face (Hill & Sharma, 2020). Our results show children may be vulnerable to a "moral or causal agent" of TTM storytelling. Thus, the need for intervention.

The current work has identified a research and policy shortcoming where concern over advertising high-calorie, low-nutrient foods to children is an established focus for policy, but the presence of such foods embedded in entertainment media is not addressed. Our research suggests that the foods children are exposed to in TTM will vary greatly according to the target gender. Girls' TTM feature an overabundance of sweets shown in conjunction with themes of nurturance and domesticity. With an established need for intervention, we now address possible interventions, namely: legislation, industry self-regulation, media rating systems, and promoting consumer awareness to address the concerning TTM exposure patterns found in this research.

5.2 | Possible interventions

5.2.1 | Legislation

One intervention utilized to reduce harm is governmental legislation. Countries have developed regulations to address the marketing of unhealthy foods to children. When considering governmental policies, Taillie et al. (2019) found 16 countries having statutory regulations on food marketing to children. One of the most common policies being restrictions on television advertising during children's programming. However, legislation seems an unlikely intervention for

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the problematic food exposure patterns found in TTM targeting girls given the idiosyncratic nature of media creative decisions featuring sweets. Unlike food advertising regulation (Rozendaal & Buijzen, 2023) where specific high-calorie, low-nutrient foods are targeted for exclusion from children's programming, general portrayals of high-calorie, low nutrient foods would not have associated dietary specifics.

5.2.2 | Industry self-regulation

Another possible intervention is industry self-regulation, however the success of industry agreements without consequences is mixed. In a sweeping condemnation of the Children's Food and Beverage Advertising Initiative in the United States, Harris et al. (2015) find that despite pledges, companies advertise candy on programming with appeals directed to children. One of the more successful industry self-regulation efforts to date has been the EU Pledge to reduce advertising of high sugar, salt, and fat foods to children in children's programming (Landwehr & Hartmann, 2020). Despite the success of the EU Pledge, findings showed that advertising in non-children's programming nonetheless reached children and did not maintain a healthy food profile (Landwehr & Hartmann, 2020). While possible, industry self-regulation may not be successful.

Nonetheless, this intervention path is worth exploring given that some of the food presentations in girls' TTM may be an artifact of traditional gender stereotypes and could be corrected.

5.2.3 | Media rating systems

A third intervention path would be to include potentially harmful food depictions and socializing messages regarding food in media content rating systems. Study 2 Model 2 provides clear evidence that current media rating systems do not protect young viewers from being exposed to an overabundance of sweets. This should not be surprising considering nearly all national media rating systems focus on protecting young viewers from violence, sex, drugs, and coarse language (Federman, 2013; Kublenz-Gabriel, 2016). While most rating systems are voluntary and non-governmental, they have proven successful. For example, tobacco use was added as a rating factor to the US Motion Picture Association of America rating system in 2007 (MPAA, 2018). Since then, movies rated for younger audiences have featured significantly less tobacco use (Tynan et al., 2019). However, industry-wide change would require an increase in consumer awareness of the nature of food portrayals in TTM and civic involvement in the issue.

5.2.4 | Promoting consumer awareness

A final intervention strategy focuses on promoting consumer awareness. We see Common Sense Media's comprehensive approach to the media they review for age appropriateness as a candidate system to promote consumer awareness. Unfortunately, Common Sense Media does not currently include ratings of food messages in their reviews and we were unable to find any other organization that systematically rates food messages in media. If food-related content ratings could be part of a consumer awareness campaign, this would help parents and children

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and make informed decisions (Newman & Oates, 2014) about children's media and associated toys.

5.3 | Limitations and future research

While this research reveals important differences in the themes and foods shown in girls' TTM compared to boys' TTM, there are several limitations and opportunities for further research. We begin with the fact that Study 2 only considered "verbal cues" since it was based on transcripts of each program's audio. Previous research has found that 35.1% of food cues in children's media were visual only (Scully et al., 2016), and these cues would be missed by text analysis of transcripts. Study 1 provided some insight regarding visual food cues, but we were not able to quantify visual data at the same level as we could quantify verbal data using automated text analysis in Study 2. Future research might utilize AI for image recognition to quantify visual cues in TTM using metrics such as food type, time on screen, and percent of screen.

TTM could be an important component of child socialization regarding food preferences; however, the studies presented in this paper are descriptive and correlational in nature. We did not empirically test the impact of watching gender targeted TTM on children's food preferences or food choices. We believe this is an area where more research is needed to establish the effect that consuming gender targeted TTM has on health outcomes. Because of the nature of observational learning, it would likely be best to use longitudinal studies to study the effects of gender targeted TTM consumption.

Finally, while we find evidence that sweets are associated with female gender stereotypical plot themes, we did not identify a mechanism in the media production process that causes more sweets to appear in girls' TTM compared to boys' TTM. It would be instructive for future policy decisions to fully understand how toy manufacturers and media production companies make decisions to feature so many sweets in girls' toys and associated TTM.

5.4 | Conclusion

This work has brought forward a clear tendency in TTM to associate sweet foods with the themes of nurturance and domesticity. The level of sweet food association with these stereotypically feminine themes manifests itself in words related to sweet foods being spoken 8.37 times more frequently in girls' TTM than in boys' TTM. This represents a previously undocumented phenomenon of concern. These findings spotlight the need for industry cooperation and consumer awareness as well as the possibility of food depictions to be included in parental guidance rating systems regarding children's media. Changes to consumer thinking, media production, and policy begin with the recognition of a problem. Research findings here provide evidence that we have a previously unidentified issue that needs to be addressed.

AUTHOR CONTRIBUTIONS

Eric Setten: Conceptualization; data curation; formal analysis; investigation; methodology; writing – original draft; writing – review and editing. **T. Bettina Cornwell:** Conceptualization; data curation; formal analysis; investigation; methodology; writing – original draft; writing – review and editing.

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REFERENCES

Anderson, P.M., Butcher, K.F. & Schanzenbach, D.W. (2019) Understanding recent trends in childhood obesity in the United States. *Economics & Human Biology*, 34, 16–25.

Araque-Padilla, R., Villegas-Navas, V. & Montero-Simo, M.J. (2019) Non-branded food placements in children's entertainment programs: a content analysis. *Health Communication*, 34(10), 1222–1229.

Bainbridge, J. (2010) Fully articulated: the rise of the action figure and the changing face of children's entertainment. *Continuum: Journal of Media & Cultural Studies*, 24(6), 829–842.

Balducci, B. & Marinova, D. (2018) Unstructured data in marketing. *Journal of the Academy of Marketing Science*, 46(4), 557–590.

Basch, C.H., Guerra, L.A., Reeves, R. & Basch, C.E. (2015) Advertising violent toys in weekly circulars of popular retailers in the United States. *Health Promotion Perspectives*, 5(3), 191–197.

Berger, J., Humphreys, A., Ludwig, A., Moe, W.W., Netzer, O. & Schweidel, D.A. (2020) Uniting the tribes: using text for marketing insight. *Journal of Marketing*, 84(1), 1–25.

Blakemore, J.E.O. & Centers, R.E. (2005) Characteristics of boys' and girls' toys. *Sex Roles*, 53(9/10), 619–633.

Boyer, P.J. (1986) Toy-based TV: effects on children debated. *The New York Times*.

Brenkert, G.G. (1998) Marketing and the vulnerable. *Business Ethics Quarterly*, 8(1), 7–20.

Cedro, C. (2019) Sugar and spice and everything nice: an exploration of the relationship between representations of femininity and different depictions of baking, cake, and sweet food in contemporary Australian cookbooks (Doctoral dissertation, Auckland University of Technology).

Chaplin, L.N. & John, D.R. (2010) Interpersonal influences on adolescent materialism: a new look at the role of parents and peers. *Journal of Consumer Psychology*, 20(2), 176–184.

Chaplin, L.N., Lowrey, T.M., Ruvio, A.A., Shrum, L.J. & Vohs, K.D. (2020) Age differences in children's happiness from material goods and experiences: the role of memory and theory of mind. *International Journal of Research in Marketing*, 37(3), 572–586.

DeMott, R. (2015) How transmedia made Lego the most powerful brand in the world. *Animation World Network*. Available at: https://www.awn.com/animationworld/how-transmedia-made-lego-most-powerful-brand-world

Desrochers, D.M. & Holt, D.J. (2007) Children's exposure to television advertising: implications for childhood obesity. *Journal of Public Policy & Marketing*, 26(2), 182–201.

Domestic. (n.d.) *Merriam-Webster.com dictionary*. Available at: https://www.merriam-webster.com/dictionary/domestic

Domesticity. (n.d.) *Merriam-Webster.com dictionary*. Available at: https://www.merriam-webster.com/dictionary/domesticity

Eisen, S., Matthews, S.E. & Jirout, J. (2021) Parents' and children's gendered beliefs about toys and screen media. *Journal of Applied Developmental Psychology*, 74, 101276.

Federal Communications Commission. (1974) Children's television programs: report and policy statement. *Federal Register*, 39, 39396–39409.

Federman, J. (2013) Media ratings systems: a comparative review. In: Price, M.E. (Ed.) *The V-chip debate: content filtering from television to the internet*. New York, NY: Routledge, pp. 99–132.

Fine, C. & Rush, E. (2018) "Why does all the girls have to buy pink stuff?" the ethics and science of the gendered toy marketing debate. *Journal of Business Ethics*, 149, 769–784.

Friestad, M. & Wright, P. (1994) The persuasion knowledge model: how people cope with persuasion attempts. *Journal of Consumer Research*, 21(1), 1–31.

Gabrielli, J., Traore, A., Stoolmiller, M., Bergamini, E. & Sargent, J.D. (2016) Industry television ratings for violence, sex, and substance use. *Pediatrics*, 138(3), e20160487.

Gentile, D.A. (2008) The rating systems for media products. In: Calvert, S.L. & Wilson, B.J. (Eds.) *The handbook of children, media, and development*. Chichester, UK: John Wiley and Sons Ltd., pp. 527–551.

Harris, J.L., LoDolce, M., Dembek, C. & Schwartz, M.B. (2015) Sweet promises: candy advertising to children and implications for industry self-regulation. *Appetite*, 95, 585–592.

17456606, 0, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/joca.12613 by Eric Setten - California State University , Wiley Online Library on [16/12/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Harvey, C.B. (2013) Transmedia storytelling and audience: memory and market. In: Youngs, G. (Ed.) *Digital world*. London, UK: Routledge, pp. 115–127.

Hasbro. (2016) Annual report 2015. Available at: https://investor.hasbro.com/static-files/99b4fb81-b78a-4776-b339-b493581dcd97

Hasbro. (2017) Annual report 2016. Available at: https://investor.hasbro.com/static-files/29d784c7–4370-4122-8717-dc0485e5d9f1

Hasbro. (2021) Annual report 2020. Available at: https://investor.hasbro.com/static-files/500c9a4b-eaa0-44e4-9277-cb95e99a6927

Hill, R.P. & Sharma, E. (2020) Consumer vulnerability. *Journal of Consumer Psychology*, 30(3), 551–570.

Holt, D.J., Ippolito, P.M., Desrochers, D.M. & Kelley, C.R. (2007) *Children's exposure to TV advertising in 1977 and 2004: information for the obesity debate*. Washington, DC: United States Federal Trade Commission.

Horta, P.M., Machado, B.B. & Souza, L.V.D. (2021) Food content on children movies from 2013 to 2018: taking food processing into account. *Jornal de Pediatria*, 97(3), 342–347.

Humphreys, A. & Wang, R.J. (2018) Automated text analysis for consumer research. *Journal of Consumer Research*, 44(6), 1274–1306.

Jenkins, H. (2003) Transmedia storytelling: moving characters from books to films to video games can make them stronger and more compelling. *MIT Technology Review*. Available at: https://www.technologyreview.com/2003/01/15/234540/transmedia-storytelling/

Jenkins, H. (2010) Transmedia storytelling and entertainment: an annotated syllabus. *Continuum: Journal of Media & Cultural Studies*, 24(6), 943–958.

Kennedy, A.M., Jones, K. & Williams, J. (2019) Children as vulnerable consumers in online environments. *Journal of Consumer Affairs*, 53(4), 1478–1506.

Kublenz-Gabriel, L. (2016) Rating the rating systems: a comparison of media rating systems worldwide. Master's thesis, University of Twente.

Kunkel, D. & Watkins, B. (1987) Evolution of Children's television regulatory policy. *Journal of Broadcasting & Electronic Media*, 31(4), 367–389.

Landwehr, S.C. & Hartmann, M. (2020) Industry self-regulation of food advertisement to children: compliance versus effectiveness of the EU pledge. *Food Policy*, 91, 101833.

Lego. (2022) Lego® friends celebrates its 10-years of building friendships and future creators. Available at: https://www.lego.com/en-us/aboutus/news/2021/january/lego-friends-10?locale=en-us

Lezak, M. (1995) *Neuropsychological assessment*. Oxford, UK: Oxford University Press.

Manganello, J., Franzini, A. & Jordan, A. (2008) Sampling television programs for content analysis of sex on TV: how many episodes are enough? *Journal of Sex Research*, 45(1), 9–16.

Martins, N. & Riddle, K. (2022) Reassessing the risks: an updated content analysis of violence on US children's primetime television. *Journal of Children and Media*, 16(3), 368–386.

Mattel. (2022) Annual report 2021. Available at: https://investors.mattel.com/static-files/d2996a7a-dbf9-4723-b40e-23c39b0c4cc6

Matthes, J. & Naderer, B. (2019) Sugary, fatty, and prominent: food and beverage appearances in children's movies from 1991 to 2015. *Pediatric Obesity*, 14(4), e12488.

McAlister, A.R. & Cornwell, T.B. (2009) Preschool children's persuasion knowledge: the contribution of theory of mind. *Journal of Public Policy & Marketing*, 28(2), 175–185.

McAlister, A.R. & Cornwell, T.B. (2010) Children's brand symbolism understanding: links to theory of mind and executive functioning. *Psychology & Marketing*, 27(3), 203–228.

McAlister, A.R. & Cornwell, T.B. (2012) Collectible toys as marketing tools: understanding preschool children's responses to foods paired with premiums. *Journal of Public Policy & Marketing*, 31(2), 195–205.

Meinhardt-Injac, B., Daum, M.M. & Meinhardt, G. (2020) Theory of mind development from adolescence to adulthood: testing the two-component model. *British Journal of Developmental Psychology*, 38(2), 289–303.

Moore, E.S. (2004) Children and the changing world of advertising. *Journal of Business Ethics*, 52, 161–167.

Motion Picture Association of America. (2018) G is for golden: The MPAA film ratings at 50. Available at: https://www.motionpictures.org/wp-content/uploads/2018/11/G-is-for-Golden.pdf

Muehling, D.D., Carlson, L. & Laczniak, R.N. (1992) Parental perceptions of toy-based programs: an exploratory analysis. *Journal of Public Policy & Marketing*, 111(1), 63–71.

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Naderer, B., Matthes, J., Marquart, F. & Mayrhofer, M. (2018) Children's attitudinal and behavioral reactions to product placements: investigating the role of placement frequency, placement integration, and parental mediation. *International Journal of Advertising*, 37(2), 236–255.

Newman, N. & Oates, C.J. (2014) Parental mediation of food marketing communications aimed at children. *International Journal of Advertising*, 33(3), 579–598.

Nurturance. (n.d.) *Merriam-Webster.com dictionary*. Available at: https://www.merriam-webster.com/dictionary/nurturance

Parents Television Council. (2018) A dress rehearsal for tragedy. Available at: http://w2.parentstv.org/MediaFiles/PDF/Studies/2018GVstudy.pdf

Parkin, K.J. (2006) *Food is love: food advertising and gender roles in modern America*. Philadelphia, PA: University of Pennsylvania Press.

Pennebaker, J.W., Boyd, R.L., Jordan, K. & Blackburn, K. (2015) *The development and psychometric properties of LIWC2015*. Austin, TX: University of Texas at Austin.

Reich, S.M., Black, R.W. & Foliaki, T. (2018) Constructing difference: Lego® set narratives promote stereotypic gender roles and play. *Sex Roles*, 79, 285–298.

Robertson, D.C. & Breen, B. (2013) *Brick by brick: how Lego rewrote the rules of innovation and conquered the global toy industry*. New York, NY: Crown Business.

Rozendaal, E. & Buijzen, M. (2023) Children's vulnerability to advertising: an overview of four decades of research (1980s–2020s). *International Journal of Advertising*, 42(1), 78–86.

Scully, P., Reid, O., Macken, A., Healy, M., Saunders, J., Leddin, D. et al. (2016) Food and beverage cues in children's television programmes: the influence of programme genre. *Public Health Nutrition*, 19(4), 616–624.

Selcuk, B., Gonultas, S. & Ekerim-Akbulut, M. (2023) Development and use of theory of mind in social and cultural context. *Child Development Perspectives*, 17(1), 39–45.

Speer, R., Chin, J. & Havasi, C. (2017) ConceptNet 5.5: an open multilingual graph of general knowledge. *Proceedings of the AAAI Conference on Artificial Intelligence*, 31, 4444–4451.

Taillie, L.S., Busey, E., Stoltze, F.M. & Dillman Carpentier, F.R. (2019) Governmental policies to reduce unhealthy food marketing to children. *Nutrition Reviews*, 77(11), 787–816.

Tynan, M.A., Polansky, J.R., Driscoll, D., Garcia, C. & Glantz, S.A. (2019) Tobacco use in top-grossing movies—United States, 2010–2018. *Morbidity and Mortality Weekly Report*, 68(43), 974–978.

Tzoutzou, M., Bathrellou, E. & Matalas, A.L. (2019) Food consumption and related messages in animated comic series addressed to children and adolescents. *Public Health Nutrition*, 22(8), 1367–1375.

Uribe, R. & Fuentes-García, A. (2015) The effects of TV unhealthy food brand placement on children: its separate and joint effect with advertising. *Appetite*, 91, 165–172.

van der Vegt, I., Mozes, M., Kleinberg, B. & Gill, P. (2021) The grievance dictionary: understanding threatening language use. *Behavior Research Methods*, 53(5), 2105–2119.

Villegas-Navas, V., Montero-Simo, M.J. & Araque-Padilla, R.A. (2019) Investigating the effects of non-branded foods placed in cartoons on children's food choices through type of food, modality and age. *International Journal of Environmental Research and Public Health*, 16(24), 5032.

Villegas-Navas, V., Montero-Simo, M.J. & Araque-Padilla, R.A. (2020) The effects of foods embedded in entertainment media on children's food choices and food intake: a systematic review and meta-analyses. *Nutrients*, 12(4), 964.

von Stackelberg, P. (2018) Transmedia franchising: driving factors, storyworld development, and creative process. In: Freeman, M. & Gembarato, R.R. (Eds.) *The Routledge companion to transmedia studies*. New York, NY: Routledge, pp. 233–242.

Wellman, H.M. (1990) *The child's theory of mind*. Cambridge, MA: MIT Press.

Wellman, H.M. & Liu, D. (2004) Scaling of theory-of-mind tasks. *Child Development*, 75(2), 523–541.

Wojahn, E. (1988) *Playing by different rules*. New York, NY: AMACOM.

World Health Organization. (2022) *Food marketing exposure and power and their associations with food-related attitudes, beliefs and behaviours: A narrative review*. Available at: https://apps.who.int/iris/bitstream/handle/10665/351521/9789240041783-eng.pdf

Wright, P., Friestad, M. & Boush, D.M. (2005) The development of marketplace persuasion knowledge in children, adolescents, and young adults. *Journal of Public Policy & Marketing*, 24(2), 222–233.

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How to cite this article: Setten, E., & Cornwell, T. B. (2024). Sugar coating cartoons for girls: Gender stereotypical themes and the use of food in toy-tied media. *Journal of Consumer Affairs*, 1–30. https://doi.org/10.1111/joca.12613

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APPENDIX A: Study 2 list of franchises with pretested target gender score and minutes of content included in text corpus

Boys' franchises (≥5.00)	Score	Minutes	Neutral franchises (3.01–4.99)	Score	Minutes	Girls' franchises (≤3.00)	Score	Minutes
Avengers	5.52	2499	Avatar the Last Airbender	4.23	624	Barbie	1.83	1929
Batman	5.75	1133	Bubble Guppies	3.82	598	DC Superhero Girls	2.50	1019
Ben 10	6.00	572	Caillou	4.15	613	Descendants	2.33	476
Beyblade	5.75	572	Care Bears	3.33	825	Disney Fairies	1.89	489
Blaze & Monster Machines	5.88	572	Daniel Tiger	4.07	520	Disney Princesses	1.65	1851
Disney Cars	5.23	359	Despicable Me/ Minions	4.12	374	Doc McStuffins	2.25	624
GI Joe	6.05	920	Dinotrux	4.60	598	Dora the Explorer	2.96	726
Go Diego Go	5.17	624	Harry Potter	4.28	1584	Enchantimals	1.75	525
He-Man	5.88	726	Incredibles	4.29	234	Lalaloopsy	1.57	344
How to Train Your Dragon	5.11	902	Jake & the Neverland Pirates	4.92	676	Lego Friends	2.40	506
Jurassic Park/ Jurassic World	5.17	1246	Lego Elves	3.17	192	Littlest Pet Shop	2.62	1144
Justice League	5.04	1127	Octonauts	3.91	598	LOL Surprise	2.00	223
Lego Ninjago	5.00	673	Paw Patrol	4.70	688	Miraculous	2.67	661
Spider-Man	5.77	1150	Peppa Pig	3.69	722	Monster High	2.00	1038
Star Wars	5.11	3025	PJ Masks	4.58	572	My Little Pony	2.45	1404
Stretch Armstrong	5.50	506	Pokémon	4.18	1905	Polly Pocket	2.06	572
Teenage Mutant Ninja Turtles	5.66	785	Pound Puppies	3.18	572	Power Puff Girls	2.35	418

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Boys' franchises (≥5.00)	Score	Minutes	Neutral franchises (3.01–4.99)	Score	Minutes	Girls' franchises (≤3.00)	Score	Minutes
Thomas and Friends	5.12	591	Power Rangers	4.68	630	Sailor Moon	2.36	624
ThunderCats	5.78	598	Secret Life of Pets	4.00	173	She-Ra	2.33	624
Transformers	5.86	2594	Sesame Street	3.96	672	Shimmer and Shine	1.43	618
Voltron	6.00	598	Skylanders	4.57	624	Shopkins	1.83	361
X-Men	5.46	1467	Sponge Bob	4.10	777	Sofia the First	1.67	598
			Super Why	4.09	702	Spirit	3.00	814
			Super Wings	4.50	624	Strawberry Shortcake	1.72	752
			Team Umizoomi	4.00	598	Tangled	2.19	674
			Teen Titans GO	4.33	724	Winx Club	1.38	624
			Toy Story	4.22	384			
			Troll Hunters	4.67	572			
			Trolls	3.79	690			
			Wild Kratts	4.22	520			
Total boys'		23,239	Total neutral		19,585	Total girls'		19,638

Note: There were seven franchises excluded due to fewer than four parents being adequately familiar with the franchise to give ratings. The seven excluded franchises were Beatbugs, Ever After High, Glitter Force, Luna Petunia, Project MC2, Super Monsters, and Zak Storm.

APPENDIX B: Study 2 food dictionaries by category

Sweets: Buttercream, cake, cakes, candied, candies, candy, cheesecake, chocolate, chocolates, confection, confectionaries, confectionary, confections, cookie, cookies, cupcake, cupcakes, custard, custards, dessert, desserts, donut, donuts, doughnut, doughnuts, eclair, éclair, eclairs, éclairs, fritter, fritters, frosting, froyo, frozen yogurt, fudge, fudges, gelato, gumdrop, gumdrops, gummies, ice cream, ice creams, ice lollies, ice lolly, icing, jelly bean, jelly beans, jellybean, jellybeans, licorice, lollipop, lollipops, lolly pop, lolly pops, lollypop, marshmallow, marshmallows, milkshake, milkshakes, muffin, muffins, pastries, pastry, pie, pies, popsicle, popsicles, pudding, s'more, s'mores, scone, scones, sherbet, smore, smores, snickerdoodle, snickerdoodles, sorbet, sugar, sugared, sugars, sundae, sundaes, sweets, and vanilla.

Fast Food: Burger, burgers, burrito, burritos, catsup, cheeseburger, cheeseburgers, chicken nugget, chicken nuggets, chicken tender, chicken tenders, fish and chips, french fries, french fry, fried chicken, guac, guacamole, hamburger, hamburgers, hot dog, hot dogs, hotdog, hotdogs, ketchup, mayo, mayonnaise, microwavable, microwaveable, mustard, nacho, nachos,

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onion ring, onion rings, patties, patty, pizza, pizzas, potato chip, potato chips, ramen, salsa, salsas, soda, sodas, sushi, taco, tacos, tortilla chip, and tortilla chips.

Vegetables: Artichoke, artichokes, asparagus, aubergine, beet, beetroots, beets, bok choi, bok choy, broccoli, brussel sprout, brussel sprouts, brussels sprout, brussels sprouts, butternut squash, buttersquash, cabbage, cabbages, carrot, carrots, cauliflower, celery, coleslaw, corn, cucumber, cucumbers, eggplant, eggplants, kale, lettuce, onion, onions, parsnip, parsnips, pea, peas, peppers, potato, potatoes, radish, radishes, rutabaga, rutabagas, spinach, summer squash, tomato, tomatoes, turnip, turnips, vegetable, vegetables, veggie, veggies, winter squash, and zucchini.

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